

CLAIMS

1. An apatite particle represented by a molecular formula

$\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$, where $x = 1, 2, \dots, 9$, or by a chemical formula

$\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$, where $x = 1, 2, \dots, 7$, with the particle size being 30 nm to

5 2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm to 300 nm.

2. A method of producing an apatite particle represented by a molecular

formula $\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$, where $x = 1, 2, \dots, 9$, or by a chemical

formula $\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$, where $x = 1, 2, \dots, 7$, with the particle size being

30 nm to 2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm

10 to 300 nm, by incubating a solution containing inorganic phosphoric acid, calcium ions and magnesium ions for a predetermined time.

3. An apatite particle- gene complex in which a specified gene is combined

with an apatite particle which is represented by a molecular formula

$\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$, where $x = 1, 2, \dots, 9$, or by a chemical formula

15 $\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$, where $x = 1, 2, \dots, 7$, with the particle size being 30 nm to 2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm to 300 nm.

4. A method of transfecting a preset gene into a specified cell by incubating,

with said specified cell, an apatite particle- gene complex in which a preset

gene is combined with an apatite particle represented by a molecular formula

20 $\text{Ca}_{10-x}\text{Mg}_x(\text{PO}_4)_6(\text{OH})_2$, where $x = 1, 2, \dots, 9$, or by a chemical formula

$\text{Ca}_{8-x}\text{Mg}_x\text{H}_2(\text{PO}_4)_6$, where $x = 1, 2, \dots, 7$, with the particle size being 30 nm to

2500 nm, preferably 50 nm to 1000 nm and more preferably 50 nm to 300 nm.